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## Impact of Social Science (Economics) Distribution Requirement on Critical Thinking Skills in Kenya's Second and Third Year Social Science Students

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### Abstract

*Regarding the learning effects of critical thinking courses, this paper focuses on attendance and Economics distribution requirement. The study results indicate that 9-week critical thinking course attendance matters in developing critical thinking skills that improve the learning process, ultimately, acquisition of high order critical thinking skills such as inference and argument. At the same time, the level of Economics prerequisite coursework taken concurrently as distribution requirement positively affects critical thinking. However, this study argues that the effects of Economics prerequisite coursework on critical thinking vary across individuals as the students who took the beginning-level conceptual prerequisite courses had higher learning effect in critical thinking than those of advanced computational courses.*

**Keywords:** *Critical thinking, social science distribution requirement, marginal effects, interaction model*

### 1. Introduction

In the field of education of higher learning, the importance of critical thinking skills has been always emphasized for good decision making (Halpern 1998). Some even believe that critical thinking and reasoning skills are the basis for ethical thinking. (Globethics.net conference, 2018). The emphasis on critical thinking has been always prevalent in Africa for a long period time. Nigeria's national policy on education that dates back to 2004 emphasizes the critical thinking ability that enables citizens to acquire an objective view of the local and external environment as well as become useful members of the society (Nigeria National Policy on Education, 2004). However, the gap between reality and the supposed goals of the national educational policy has not been reduced. According to the 2017 study, the Nigerian media and pop culture could not fully articulate the concepts like the rule of law, separation of powers, and independence of the judiciary (Segunro 2017). An analysis of the past undergraduate and postgraduate teacher education programs in an education department in Africa suggested that lower level cognitive skills such as recalling and understanding has been emphasized at the expense of higher order skills such as analysis, synthesis and evaluation (Ijaiya, Alabi & Fasasi, 2011).

Kenya is no different. Educators in Kenya have emphasized the introduction of "the design thinking" curriculum (Ndiani 2017), which has taken root in the developed countries. The curriculum's goal is fostering and promoting innovation by introducing problem solving skills to real-life problems that affect citizens in Kenya. For this research, the author looks at the Catholic University of Eastern Africa's Department of Social Sciences. The Department has adopted the critical thinking curriculum since 2014 and has been offering this coursework to 2<sup>nd</sup> and 3<sup>rd</sup> year undergraduate students as a 9-week mandatory curriculum. At the same time, the University adopted the distribution requirement program such as introducing the Economics prerequisite courses (one to four courses) to non-Economics major students in the Department.

These programs of critical thinking and distributional requirement were introduced concurrently against the belief that the existing critical thinking tests primarily measure the cognitive ability of an individual that is deemed to be innate. The author of this study agrees with the belief that there is often a learned, developable aspect to critical thinking, which allows individuals to improve their critical thinking skills with right training over time (Wang & Zheng, 2016)

The study explores the hypothesis that Economics prerequisite courses as distribution requirement can help develop critical thinking skills that are necessary to improve the students' overall academic performance and test this hypothesis among the second and third year undergraduate students at the Catholic University of Eastern Africa's Department of Social Sciences.

## 2. Method

### 2.1. Participants

The study was conducted from 2014 January to 2017 December selecting sample students from the Catholic University of Eastern Africa's Department of Social Science and government students from the University of Nairobi majoring in Sociology, Political Science, Anthropology, Economics and Development Studies. In total 996 students participated in the pre-critical thinking coursework survey conducted before the coursework began and 840 participated in the post-critical thinking coursework survey after the coursework was done during the studied period.

### 2.2. Measures

To measure the variables pertaining to the performance during pre and post critical thinking coursework, students were asked to answer four questions that test deductive and organization skills. The Watson Glaser (WG) (Glaser 1941) critical thinking test was used to design these surveys. The following are 4 areas of testing critical thinking skills according to WG (Glaser 1941).

- Students need to have conclusions that follow from the statement –deductive skill
- After giving statements regarded as true, students need to draw possible inferences which might be drawn from facts in the statement. Then, students need to analyze each inference separately and decide on its degree of truth-inference skill
- Ability to break down a long story to a series of small events- organization skill
- Students have ability to draw strong arguments from the statements assumed to be true- argument skill.

In the pre-critical thinking course survey during the 1<sup>st</sup> week of the curriculum four questions were asked testing deductive and organization skills as low order critical thinking skills. In the post-critical thinking course survey during the final week, five questions were asked applying all four skills (deductive, inference, organization and argument). This study uses the Lee and Lee model (Lee and Lee 2015) as they have explored the learning effects of TV presidential debate views. Like the Lee & Lee model, each question is used to create a critical thinking variable by counting the correct answers the students answered during the pre and post critical thinking coursework periods.

### 2.3. Data Collection and Data Analysis

The independent variables were attendance and interest level in the critical thinking coursework and the level of Economics prerequisite coursework the students have taken at the time of the surveys. The study hypothesized attendance and interest levels positively affect the students' performance in the post critical thinking course surveys. The study concurrently tests the effect of Economics education as a prerequisite to the performance of critical thinking.

The control and demographic variables are ethnicity, major, parent university, age, and sex.

The dependent variable of this study is post critical thinking coursework survey performance after finishing the 9-week coursework in critical thinking.

This study analyzes the data by using the ordinary least squares methods. Sample data was selected proportionally according to ethnicity composition, sex, age, and major for the student body in the Department of Social Science using the stratified sampling.

This study uses the Brambor, Clark and Golder (2006) interaction model to test that acquiring critical thinking skills is conditioned by Economics prerequisite education.

This study attempts to assess the role of the Economics courses (one of many distribution requirement choices in developed countries) on the development of critical thinking abilities among Kenya's second and third year university students.

### 2.4. Findings

One of the main hypotheses of this study was that economics education (distribution requirement) conditions the critical thinking acquirement process.

	Regression Coefficient	SE
Course attendance	0.26***	0.09
Course interest	0.21***	0.06
Economic Prerequisite	0.18**	0.08
major	0.05	0.05
ethnicity	-0.01	0.02
Parent University	0.04	0.06
age	-0.03	0.11
male	0.19*	0.11
Constant	1.34***	0.18
N	412	
R2 Adjusted	0.21	

*Table 1: Taking Critical Thinking Course and Learning*  
*Note: Dependent Variable Is Final Survey Performance*  
*After 9-Week Critical Thinking Coursework*  
 \*P< .1. \*\*P< .05 \*\*\*P<.01

The results from the regression study in Table 1 indicate that 9-week attendance in critical thinking courses matters in developing critical thinking skills that improve the learning process, ultimately, the acquirement of critical thinking skills. Like the attendance variable, the level of topical interest variable shows statistical significance in the regression analysis. Concurrently, the level of Economics prerequisite coursework taken as distribution requirement positively affected the dependent variable (score on final critical thinking test survey). The male (sex) variable shows statistical significance in the analysis. Interestingly, the respondent's type of major did not have statistical significance on the final performance suggesting that students majoring in Economics did not necessarily perform better than the students of other majors with Economics courses as distribution requirement.

This study uses the Brambor, Clark and Golder (2006) interaction model to test that the process of acquiring critical thinking skills is conditioned by Economics distribution requirement (level of Economics prerequisite courses). To test this argument, the study used interaction models (Brambor, Clark, & Golder, 2006) and observed the interaction effects of 1) Economics Prerequisite Coursework and Critical Thinking Course Attendance 2) Economics Prerequisite Coursework and Interest in Critical Thinking Course. The findings in Table 2 suggest that the interaction variables are statistically significant, meaning that the number of Economics prerequisite courses taken as distribution requirement significantly conditions the effects of attending and being interested in the critical thinking coursework to develop high order inference and argument skills.

	Regression Coefficient	SE
Course attendance	0.46***	0.12
Course interest	0.09*	0.06
Economic Prerequisite	0.16**	0.08
Attendance*Economic Prerequisite	-0.33***	0.09
Interest*Economic Prerequisite	0.25**	0.1
major	0.05	0.05
ethnicity	-0.01	0.02
Parent University	0.04	0.05
age	0.01	0.1
male	0.08	0.12
Constant	1.17***	0.2

*Table 2: Interaction between Economic Distribution Requirement and Learning*  
 N 412 R2 Adjusted 0.19  
*Note: Dependent Variable Is Final Survey Performance After 9-Week*  
*Critical Thinking Coursework*  
 \*P< .1. \*\*P< .05 \*\*\*P<.01

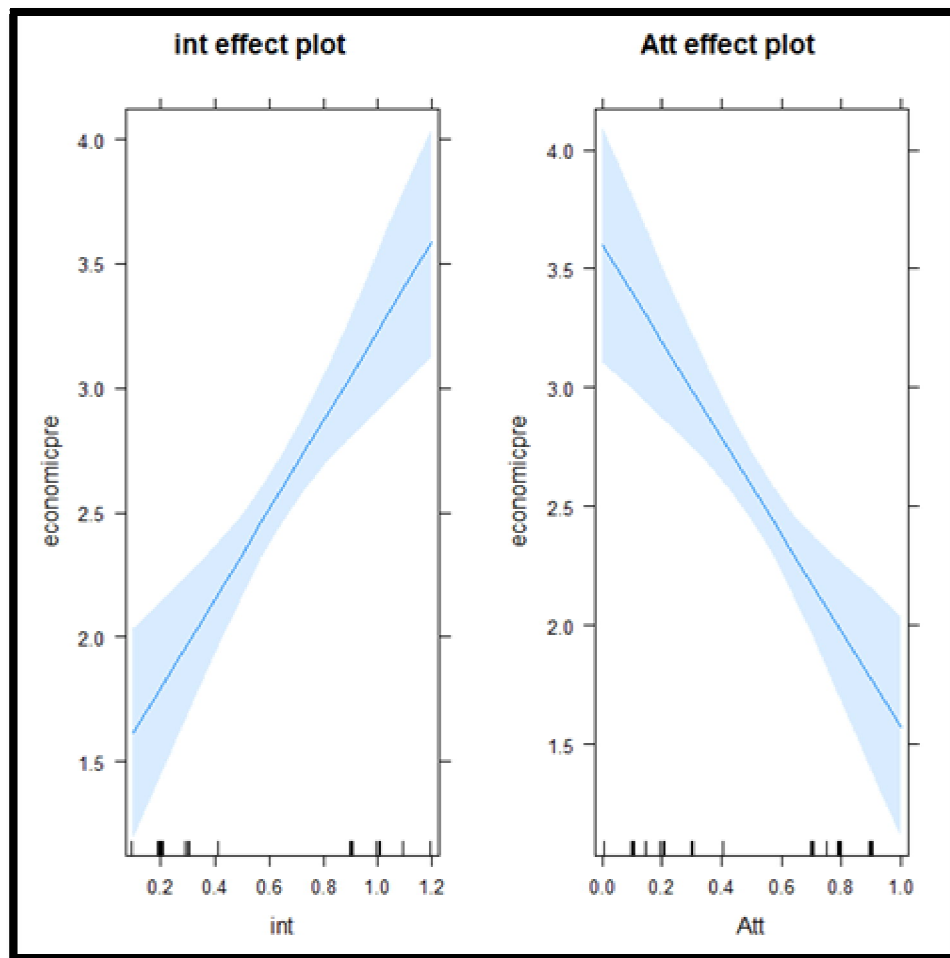


Figure 1

*Att=Attendance in Critical Thinking Course*  
*Int=Interest Level in Critical Thinking Course*  
*Economicpre=# of Economic Prerequisite Courses Taken*

To better examine the conditional effects of Economics distribution requirement on learning, this study adopts the marginal effects models. The findings suggest that the marginal effects of attending the classes tend to decrease as the level of economic prerequisite coursework taken as distribution requirement increases. This means the students who were taking beginning level Economics courses which use less mathematical formulas and use more conceptual knowledge as a distribution requirement showed a higher learning curve compared to students who took more advanced level computational Economics courses. It makes sense then that the field of major does not have statistically significant impact on the development of critical thinking skills during the 9-week course period.

The marginal effects of being interested in the topic of critical skills was to increase as the level of economics prerequisite coursework increased.

Considering that attendance is controllable and more objective compared to the student's interest level, the interaction model between Economics distribution requirement and attendance in critical thinking coursework seems to merit application value.

### 2.5. Limitations

The study lacks generalizability as different universities in Africa practice the concepts of distribution requirement and critical thinking courses differently.

### 2.6. Implications and Directions for Future Research

The study revealed that the conditional effects of Economics distribution requirement on acquiring the high order critical thinking skills is significant. Especially interaction between attendance and the Economics prerequisite courses at the beginning level was significant for the second and third year students at the Department of Social Sciences. This result suggests the importance of adopting the distribution requirement that gears toward improving the critical thinking skills that are transferrable across different coursework. At the same time, the importance of adopting the Economics prerequisite at the conceptual level rather than computational manner was more effective for the African students.

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